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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/069,643	02/28/2002	Hiroyoshi Watanabe	029430-505	3587

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EXAMINER	
DANG, THUAN D	

ART UNIT	PAPER NUMBER
1764	9

DATE MAILED: 07/15/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/069,643	WATANABE ET AL.	
	Examin r	Art Unit	
	Thuan D. Dang	1764	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 May 2003* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-42* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-42* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *6,7* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Specification

The abstract of the disclosure is objected to because the abstract should be written in a single paragraph. Correction is required. See MPEP § 608.01(b).

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 4, 11, 16, 19, 25, 26, and 42 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claims 4, 16, 25, 26, 35, and 42 it is unclear what the difference between the potassium in independent claims and the alkali metal compounds in claims 4, 16, 25, and 26. This makes dependent claims inconsistent with independent claims.

Claims 11 and 19 are inconsistent with claims 9 and 17, correspondingly since while claims 9 and 17 **positively** require steam as regenerating agent, the two dependent claims **do not** require steam due to the replacing with oxygen or air. Note that the limitation of claims 11 and 19 would include every limitations recited in claims 9 and 17, correspondingly on which they depend. Applicants review claims 11 and 19 and amend them so that the dependent claims are consistent with the limitations of claims 9 and 17.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1, 2, 4-13, 15-21, 23-32, 35-37, and 40-42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kerr et al (3,429,941).

Kerr discloses a process of dehydrogenating a pulsed feed of polyisopropylbenzene including the tri-isopropylbenzene and di-isopropylbenzene to produce corresponding aro-olefins

in the presence of a catalyst containing iron and potassium compounds in the presence of continuously-fed steam so that the process is divided into two different periods – reaction and regeneration.

It *appears* that Kerr is silent as to the phase of the hydrocarbon feed (see entire patent for details). However, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of Kerr by employing a gas phase hydrocarbon for reaction since it is expected that gas or liquid phase would yield similar results.

The temperature of the process can be found on column 3, lines 48-52.

The relative amount of the steam and the hydrocarbon can be found on column 3, lines 38-44.

Kerr appears not to disclose specific LHSV of the hydrocarbon (see the entire patent for details). However, the LHSV is known as a parameter of chemical reactions.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the Kerr process by selecting appropriate LHSV of the feed to optimize the process.

Assuming arguendo that LHSV were not recognized as an optimizable parameter, it would have been obvious to one having ordinary skill in the art the operate the Kerr process at the applicants' claimed LHSV since it is expected that running the Kerr process at any LHSV would yield similar results.

It is expected that any triisopropylbenzene such as 1,3,5-triisopropylbenzene can be dehydrogenated by the Kerr process.

Kerr appears to be silent as to using oxygen or air to regenerate the coked catalyst (see the entire patent for details). However, coke deposited on the Kerr catalyst is also carbon. It is well-known that carbon can be burned off by oxygen to produce carbon dioxide or carbon monoxide gas.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the Kerr process by using oxygen or air to burn off the coke on the Kerr coked catalyst since coke makes the Kerr catalyst deactivated (col. 2, lines 9-13).

Claims 3, 14, 22, 33, 34, 38 and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kerr et al (3,429,941) in view of Soderquist et al (3,907,916).

Kerr discloses a process as discussed above.

Kerr does not disclose a catalyst also containing magnesium (see the entire patent for details). However, Soderquist discloses a dehydrogenation catalyst containing magnesium (the abstract; column 1, line 39).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the Kerr process by adding magnesium since as disclosed by Soderquist, a dehydrogenation catalyst should have magnesium.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thuan D. Dang whose telephone number is 703-305-2658. The examiner can normally be reached on Mon-Thu.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on 703-308-6824. The fax phone numbers for the organization where this application or proceeding is assigned are 703-305-5408 for regular communications and 703-305-3599 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

Thuan D. Dang
Primary Examiner
Art Unit 1764

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July 14, 2003